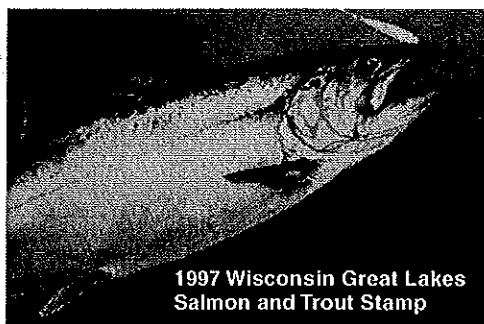


# **Expenditures of Great Lakes Salmon & Trout Stamp Revenues**



**Fiscal Years 1996-1999**

**Administrative Report # 42**

**By Sarah Keim**



Wisconsin Department of Natural Resources  
Bureau of Fisheries Management & Habitat Protection  
Madison, Wisconsin  
January, 1998



Expenditures of  
Great Lakes  
Salmon & Trout  
Stamp Revenues  
Fiscal Years 1996 - 1999

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# BACKGROUND OF THE GREAT LAKES SALMON AND TROUT STAMP PROGRAM

## *Creation of the Salmon and Trout Stamp Program*

In the early 1980's, the loss of federal funding for non-native trout and salmon stocking prompted the creation of Wisconsin's Great Lakes Salmon and Trout Stamp Program. The Wisconsin Department of Natural Resources (DNR) faced the prospect of large reductions in the Great Lakes stocking program, including the elimination of coho salmon stocking. Concerned Great Lakes anglers initiated and promoted the legislation that created the Great Lakes Salmon and Trout Stamp (Salmon Stamp). Since 1982, every angler wishing to fish for salmon or trout in the Wisconsin waters of the Great Lakes must purchase a Great Lakes Salmon and Trout Stamp. Revenues from the sale of Salmon Stamps help support the DNR trout and salmon rearing program for the Great Lakes.

## *Guidelines for the use of Great Lakes Salmon and Trout Stamp revenues<sup>1</sup>*

Wisconsin state statute 29.15(5) states "the Department shall expend the receipts from the sale of Great Lakes Trout and Salmon Stamps to supplement and enhance the existing trout and salmon rearing and stocking program for outlying waters and to administer this section." These statutes clearly define that expenditures are (1) species limited to salmon and trout only, (2) geographically limited to the Wisconsin waters of Lakes Michigan and Superior and their tributaries, and (3) program limited to the rearing and stocking program. Projects funded by stamp monies must meet these three requirements or be related to the administration of these monies.

### Species requirement

Salmon and Trout Stamp revenues may only be used for projects that pertain to salmonid species. These species include Pacific salmon (coho, chinook), trout (rainbow [steelhead], brown), and chars (brook, splake, and lake trout). Stamp money may not be used for projects specifically directed toward warm or cool water fishes such as percids, esocids, and centrarchids.

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<sup>1</sup> Excerpted from Krueger, C. C. 1983. Expenditure Plan for Great Lakes Salmon and Trout Stamp Revenues. Administrative Report No. 18. Bureau of Fisheries Management, Department of Natural Resources, Madison, Wisconsin.

## **Geographical requirement**

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Projects that use stamp revenues must be geographically focused on the Great Lakes watershed. Specifically, the geographical scope of these projects may include tributaries accessible to Great Lakes salmon and trout, as well as Lakes Michigan and Superior themselves. Projects that pertain to trout waters other than the Great Lakes (e.g., Great Lakes tributaries inaccessible to Great Lakes salmon and trout, inland trout streams and lakes) may not use Salmon Stamp money.

## **Program requirement**

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Projects funded by salmon and trout stamp money must also relate specifically to the Great Lakes stocking program. The stocking program includes a variety of activities and utilizes physical facilities which require equipment, maintenance, and labor.

Activities within the stocking program may be categorized as evaluation, research, and experimental activities or propagation activities (including facility developments).

Evaluation and research activities serve as a measure of success for the stocking program. Examples of evaluation and monitoring activities include lake-wide creel censuses, species and strain evaluations (tagging and marking studies), development of management plans (annual stocking plans, species plans, long-term plans), and annual propagation planning. Experimental activities test alternative methods of propagation and evaluation. Projects include evaluation of automatic feeders, innovative hatchery incubators, alternative fish foods, artificial reef substrates for egg incubation, new creel census methods, new fish marking methods, and gamete preservation techniques.

Propagation activities include hatchery operation costs (electricity, labor, fish food, waders, etc.), acquisition of fertilized eggs, egg incubation, fish rearing, and transportation of fish to stocking sites. Propagation activities also include the physical facilities that support the stocking program. Specifically, these facilities include raceways, rearing ponds, hatchery grounds, generators, pumps, water supply systems, vehicles, aerators, automatic fish feeders, land, engineering plans, and incubators. Salmon and trout stamp revenues may be used for maintenance, repair, or purchase of these facilities in order to fulfill the needs of the stocking program.

## *Sources of revenue for the Salmon Stamp account*

All receipts from the sale of Salmon Stamps are placed in a Salmon Stamp account. However, Salmon Stamp revenues are not the sole source of support for the salmon and trout program. Currently, some revenues from the sales of patron licenses, two-day sport fishing licenses and collector stamps also contribute. The price of each license to the consumer includes the base price of the license plus a fee that goes to the vendor. The vendor's fee is \$0.75 for the two-day license and the patron card; it is \$0.25 for the Salmon Stamp. Calculations and references in this report exclude vendor's fees.

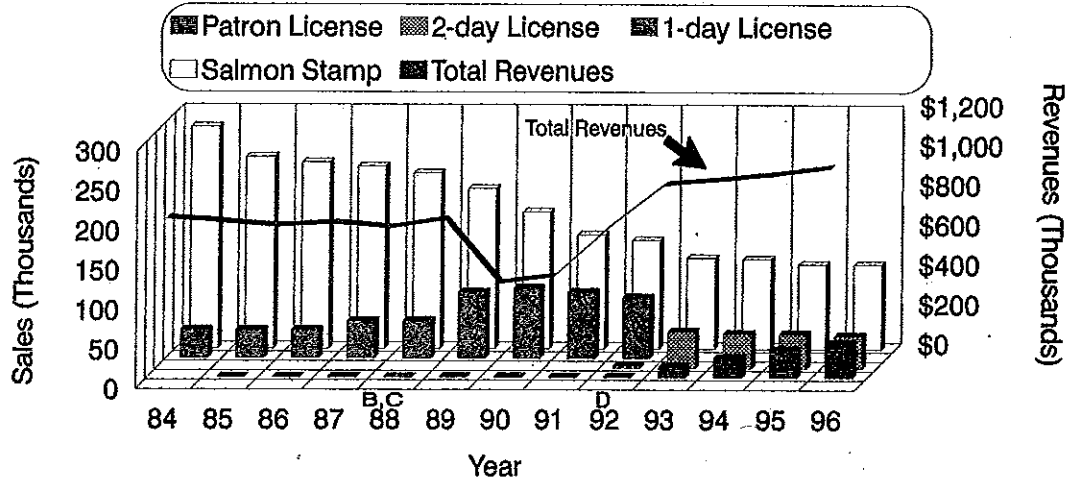
The sales of different licenses have contributed to the Salmon Stamp account over time. In 1984, the Wisconsin State Legislature approved a one-day fishing license for the Great Lakes, for a fee of six dollars. This inexpensive license allowed anglers to spend one day fishing for trout and salmon on the Great Lakes without being required to buy an annual Great Lakes Salmon and Trout Stamp. To prevent a sharp reduction in funding for the salmon and trout program, one-half of the revenues from the license supported Great Lakes salmon and trout projects. In 1988, the Legislature changed the one-day license by allowing inland fishing. Revenues from the new one-day license were split among Great Lakes salmon projects, inland trout habitat projects, and general fisheries work. In 1992, the Legislature replaced the one-day license with a two-day license for \$7.25, valid for the Great Lakes only. In 1997, the two-day license fee increased to \$9.25. By law, one-half of the revenues are placed in the Salmon Stamp account. Also in 1992, the Salmon Stamp fee was increased from \$3.00 to \$7.00. The Salmon Stamp account also receives funds from Patron License sales. For every Patron License sold, the Salmon Stamp account gets a share of the receipts (currently \$3.66 per Patron License).

In addition, collectors can purchase souvenir Salmon Stamps from previous years. All revenues from these sales contribute to the Salmon Stamp account.

General tax revenue, federal funding and donations also support the trout and salmon program.



## License Sales Contributing to the Great Lakes Salmon and Trout Stamp Account Fiscal Years 1984 - 1996



- A,B 1-day License fee increases in FY84 and FY88 (from \$3.50 to \$6.00 in FY84 and to \$6.10 in FY88).  
 1-day License valid for both Inland and Great Lakes fishing beginning in FY88.  
 D 2-day License replaces 1-day license in FY92. Salmon Stamp fee increase in FY92 (from \$3.00 to \$7.00).

### *Benefits from the Salmon Stamp program*

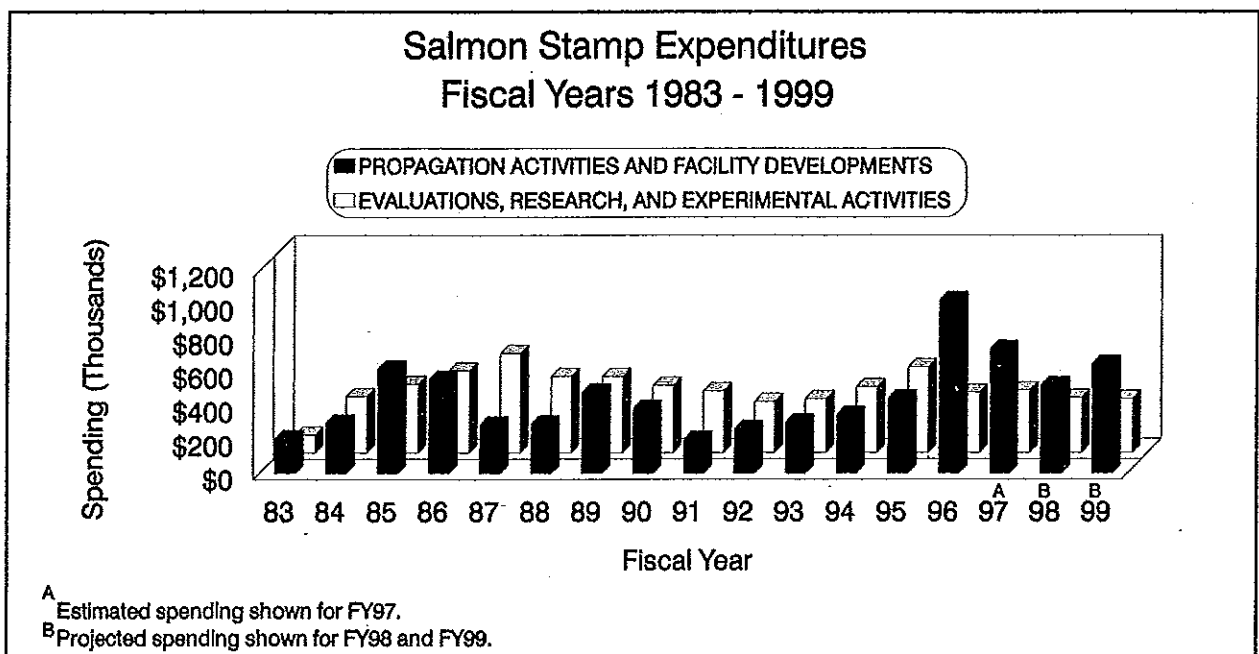
The Great Lakes Salmon and Trout Stamp has enabled the DNR to maintain and further develop the salmon and trout fisheries in Lakes Michigan and Superior and their tributaries.

Since 1983, Salmon Stamp funds have:

- ✓ Provided over \$1.6 million for physical plant improvements at state hatcheries producing salmon and trout for the Great Lakes, including a new water supply line at the Bayfield Hatchery which produces over 1.1 million trout and salmon annually.
- ✓ Helped make possible the production and stocking of nearly 80 million brook and brown trout, splake, steelhead, and coho and chinook salmon since 1982.
- ✓ Allowed fish health personnel to work with other states to develop a thiamine (vitamin B<sub>1</sub>) treatment to control simply and effectively Early Mortality Syndrome (a condition resulting in massive losses of fry shortly after hatching).
- ✓ Paid for annual creel surveys that give Wisconsin the best data on salmon and trout harvest and catch rates in the entire Great Lakes region.

✓ Assisted in the development and operation of the Bois Brule River Lamprey Barrier, the Root River Steelhead Facility, the C.D. "Buzz" Besadny Anadromous Fisheries Facility, and the Strawberry Creek Weir. The Bois Brule River Lamprey Barrier provides an effective, non-chemical sea lamprey control method. The other facilities enhance stocking efforts by collecting eggs from feral salmon and trout. These facilities also collect essential data on fish returns, as all salmon and trout passing through the facilities can be counted.

Creel surveys, fish counts at weirs, and other means of analysis provide crucial data to the DNR fisheries biologists. The data are used to help adapt the fish stocking program to changes in fish populations so that fishing opportunities for salmon and trout anglers remain at their optimum. An excellent example of how Salmon Stamp-funded evaluations help to optimize the stocking program is the development and implementation of the Lake Michigan Steelhead Fishery Management Plan<sup>2</sup>. In the mid-1980's, creel census results indicated declining return rates associated with the use of the Mount Shasta strain of steelhead. This spurred an attempt to find better-performing strains of steelhead. The results of this search and subsequent evaluations led to the current stocking program of three steelhead strains (Skamania, Chambers Creek, and Ganaraska). Not only are the three strains excellent sport fish, the staggered timing of their spawning runs provide opportunities for stream anglers nine months of the year.



<sup>2</sup> Wisconsin Department of Natural Resources. 1988. Lake Michigan Steelhead Fishery Management Plan. Administrative Report No. 29. Bureau of Fisheries Management, Department of Natural Resources, Madison, Wisconsin.

## READER'S GUIDE

This report summarizes the expenditures of the Salmon Stamp account for fiscal year 1996 (actual), fiscal year 1997 (estimated), and fiscal years 1998 and 1999 (planned). (The fiscal year runs from July 1 of one year through June 30 of the next.) Expenditures are presented by project. Each project is categorized as either Lake Superior evaluation, research, and experimental activities; Lake Michigan evaluation, research, and experimental activities; propagation activities (including physical facilities developments); or administrative activities. Each category is further divided into three groups: (a) activities ending in FY96 and FY97, (b) activities continuing from FY97 through FY99, and activities beginning in FY98. All costs associated with travel, special services, supplies, and limited term employee salaries are included. Permanent employee salaries and fringe benefits are charged against separate allocations within each district as employees engage in approved projects. While permanent employee salaries are described in this report for each category, fringe benefits are summarized only in Table 1 on page ten.

Expenditures for FY97 are estimates because the accounts for that year had not yet been closed at the time this report was prepared. Because future program needs can change, all projects are scheduled for tentative funding. Planned projects listed may not be funded at the levels shown if higher priority or urgent program needs become apparent at a later date.

The uncommitted cash balance at the end of FY96 was \$404,333. The estimated uncommitted cash balance at the end of FY97 is \$191,500; \$272,414 at the end of FY98, and \$244,573 at the end of FY99.

A six-year plan encompassing planned expenditures for use of Salmon Stamp sale revenues in the years 1983-1988 was published in 1983<sup>3</sup>. Several summaries of expenditures of Salmon Stamp sale revenues have been published. The reports summarize the fiscal years 1983-1984<sup>4</sup>, 1985-1986<sup>5</sup>, 1987-1992<sup>6</sup>, 1993-1994<sup>7</sup>, and 1995-1997<sup>8</sup>.

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<sup>3</sup> Krueger, C. C. 1983. Expenditure Plan for Great Lakes Salmon and Trout Stamp Revenues, 1983-1988. Administrative Report No. 18. Bureau of Fisheries Management, Department of Natural Resources, Madison, Wisconsin.

<sup>4</sup> Hansen, M. J. 1984. Expenditures of Great Lakes Salmon and Trout Stamp Revenues, 1983-1984. Administrative Report No. 22. Bureau of Fisheries Management, Department of Natural Resources, Madison, Wisconsin.

<sup>5</sup> Welch, D. 1987. Expenditures of Great Lakes Salmon and Trout Stamp Revenues, 1985-1986. Administrative Report No. 26. Bureau of Fisheries Management, Department of Natural Resources, Madison, Wisconsin.

<sup>6</sup> Horns, W. H., Zilker, D. A., & Perkins, L. November 1993. Expenditures of Great Lakes Trout and Salmon Revenues 1987-1992. Administrative Report No. 36. Bureau of Fisheries Management, Wisconsin Department of Natural Resources, Madison, Wisconsin.

For specific information on Great Lakes stocking numbers, two cumulative reports, updated annually, can be obtained from Bill Horns, Great Lakes Specialist in Madison: *Wisconsin's Lake Michigan Salmonid Stocking Program* and *Wisconsin's Lake Superior Salmonid Stocking Summary*.

It is important to the Wisconsin Department of Natural Resources that you find this report useful. To better meet this goal, direct your suggestions for improving this report to:

Attn.: Bill Horns, Great Lakes Specialist

Wisconsin Department of Natural Resources  
Bureau of Fisheries Management and Habitat Protection  
P.O. Box 7921  
101 South Webster Street  
Madison, Wisconsin 53703  
Phone: (608) 266-8782 or (608) 266-1877  
E-mail: [hornsw@dnr.state.wi.us](mailto:hornsw@dnr.state.wi.us)

Thank you for your interest and feedback.

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<sup>7</sup> Lentz, D. R. 1994. Expenditures of Great Lakes Trout and Salmon Stamp Revenues 1993-1994. Administrative Report No. 37. Bureau of Fisheries Management, Wisconsin Department of Natural Resources, Madison, Wisconsin.

<sup>8</sup> Oldenburg, P. S. 1996. Expenditures of Great Lakes Salmon and Trout Stamp Revenues, Fiscal Years 1995-1997. Administrative Report No. 40. Bureau of Fisheries Management and Habitat Protection, Department of Natural Resources, Madison, Wisconsin.

## CONTACT LIST

If you have any questions concerning this report, please contact the personnel listed with the specific project of interest.

Doran Arrowood	<i>Langlade Rearing Station, White Lake; (715) 882-8757</i>
Michael Baumgartner	<i>C. D. "Buzz" Besadny Anadromous Fisheries Facility, Kewaunee; (920) 388-1025</i>
Brian Belonger	<i>Peshtigo Field Station, Peshtigo; (715) 582-5006</i>
Brad Eggold	<i>Plymouth Field Station, Plymouth; (920) 892-8756</i>
Steve Fajfer	<i>Wild Rose Hatchery, Wild Rose; (920) 622-3527</i>
Pradeep Hirethota	<i>Great Lakes Research Facility, Milwaukee; (414) 382-7928</i>
Steve Hogler	<i>Manitowoc Field Station, Manitowoc; (920) 683-4923</i>
Gary Holzbauer	<i>Thunder River Rearing Station, Crivitz; (715) 757-3541</i>
Bill Horns	<i>DNR Central Office, Madison; (608) 266-8782</i>
David Ives	<i>DNR Central Office, Madison; (608) 267-7865</i>
Al Kaas	<i>Lake Mills Hatchery, Lake Mills; (920) 648-8012</i>
Randy Link	<i>Kettle Moraine Springs Hatchery, Adell; (920) 528-8825</i>
Sue Marcquenski	<i>DNR Central Office, Madison; (608) 266-2871</i>
Jim Martin	<i>Westfield Hatchery, Westfield; (608) 296-2343</i>
Larry Nelson	<i>Bayfield Hatchery, Bayfield; (715) 779-5430</i>
Paul Peeters	<i>Sturgeon Bay Service Center, Sturgeon Bay; (920) 746-2865</i>
Dennis Pratt	<i>Superior Field Station, Superior; (715) 392-7990</i>
Richard Rebicek	<i>Southeast Regional Operations, Eagle; (414) 594-6218</i>
Steve Schram	<i>Bayfield Field Station, Bayfield; (715) 779-4030</i>
Raoul Schottky	<i>Lakewood Rearing Station, Lakewood; (715) 276-6066</i>
Mike Toney	<i>Sturgeon Bay Service Center, Sturgeon Bay; (920) 746-2864</i>

**Table 1 Expenditures of Great Lakes Salmon and Trout Stamp revenues in fiscal years 1996-1999.**

	<b>FY96 Actual Expenditures</b>	<b>FY97 Estimated Expenditures</b>	<b>FY98 Planned Expenditures</b>	<b>FY99 Planned Expenditures</b>
<b>Evaluation, Research, and Experimental Activities</b>				
<i>Lake Michigan</i>				
Evaluation, Research, and Experimental Activities	\$237,781	\$270,272	\$224,135	\$217,275
Permanent Salaries	\$51,976	\$48,807	\$52,026	\$52,026
<i>Lake Superior</i>				
Evaluation, Research, and Experimental Activities	\$81,626	\$99,980	\$101,699	\$101,699
Permanent Salaries	\$39,773	\$39,209	\$39,803	\$39,803
<b>Propagation Activities</b>				
Operations	\$546,125	\$534,073	\$495,075	\$495,075
Facility Developments	\$586,000	\$241,994	\$66,000	\$191,000
Permanent Salaries	\$24,215	\$23,684	\$24,165	\$24,165
<b>Administrative Activities</b>	\$17,399	\$6,500	\$12,780	\$12,780
<b>Fringe Benefits</b>	\$73,022	\$66,100	\$66,100	\$66,100
<b>Miscellaneous</b>	\$885	\$0	\$0	\$0
<b>Total</b>	<b>\$1,658,802</b>	<b>\$1,330,619</b>	<b>\$1,081,783</b>	<b>\$1,199,923</b>

**Table 2 Annual Great Lakes Salmon and Trout Stamp account activities, fiscal years 1996-1999.**

	FY96	FY97	FY98	FY99
<b>Beginning cash balance</b>	\$1,011,080	\$404,333*	\$191,500*	\$272,414*
<b>Revenues</b>	\$1,052,055	\$1,117,786*	\$1,162,697*	\$1,172,082*
<b>Total available funds</b>	\$2,063,135	\$1,522,119*	\$1,354,197*	\$1,444,496*
<b>Total expenditures</b>	\$1,658,802	\$1,330,619*	\$1,081,783*	\$1,199,923*
<b>Cash balance</b>	\$404,333	\$191,500*	\$272,414*	\$244,573*

\* Estimated figures.

# EVALUATION, RESEARCH, AND EXPERIMENTAL ACTIVITIES

## • LAKE MICHIGAN EVALUATION, RESEARCH, AND EXPERIMENTAL ACTIVITIES

### *Activities ending in FY96 and FY97*

#### Evaluation of Thiamine Treatments of Salmon and Trout Progeny

Expenditure: \$5,088 in FY96 and \$10,000 in FY97

*Contact: Sue Marcquenski, Fish Health Specialist, Madison.*

Evidence suggests that the progeny of Lake Michigan coho and chinook salmon, steelhead, and brown trout treated as eggs and fry with a thiamine solution have lower mortality rates due to Early Mortality Syndrome (EMS) than untreated fish. This project evaluated the long-term benefits of thiamine treatments by measuring the return rates of treated and untreated chinook and coho salmon.

These expenditures were used to treat eggs from Lake Michigan broodstocks (coho and chinook salmon, steelhead, and seeforellen brown trout) at the three Wisconsin spawning weirs, the Kettle Moraine Springs Hatchery, and the Wild Rose Hatchery. Also, a group of untreated coho and chinook salmon were marked with coded wire tags in fiscal year 1996. The egg treatments worked so well that a second treatment was not necessary at the fry stage. In addition, lab results are pending on the measurement of thiamine uptake by seeforellen brown trout eggs during water hardening. The effect of pH on rate of thiamine uptake and degradation was especially focused on. Lab results are pending. The treatments appear to have a significant positive effect on fish survival in the hatcheries. Typically, up to 88 percent of untreated coho salmon fry die due to EMS. In 1997, less than 15 percent of the fry treated with thiamine during water hardening died from any cause.

#### Evaluation of Salmon and Trout Stocking

Expenditure: \$10,747 in FY96 and \$23,000 in FY97

*Contact: Bill Horns, Great Lakes Specialist, Madison.*

The goal of this project is to evaluate rearing strategies for coho salmon. This project covered the costs of marking over 300,000 coho salmon annually, using fin clips and coded wire tags, for three different evaluations. The studies are conducted at the C. D. "Buzz" Besadny Fisheries Facility and the Root River Steelhead Facility.

One study compares coho salmon that were stocked as fall fingerlings to coho salmon that were stocked as yearlings. If one group proves to be clearly more successful at surviving to return to the weir, fish propagation techniques can be adjusted accordingly.



Two other studies compare the return rates of coho salmon exposed to different rearing conditions. One study assessed the long-term effects of medicated feed on controlling bacterial kidney disease before stocking. The other assessed the long-term effects of treating eggs with thiamine during water hardening to reduce mortality caused by Early Mortality Syndrome. Both studies included releasing marked treated and untreated fish in the Kewaunee River and then comparing the adult return rates at the C. D. "Buzz" Besadny Anadromous Fisheries Facility.

The medicated feed treatment has been very successful in controlling bacterial kidney disease. The effect of thiamine on long-term coho and chinook salmon survival will be measured in fall 1997 as the mature fish return to spawn at the Besadny and Strawberry Creek facilities.

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## **Kewaunee River Adult Salmon and Trout Habitat Development**

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Expenditure: \$15,897 in FY96

*Contact: Steve Hogler, Fisheries Biologist, Manitowoc.*

This project was successfully completed during the summer of 1995. The first riffle section of the Kewaunee River stream channel upstream from Lake Michigan was wide and shallow. During periods of low water, the rocky rubble on the bottom was exposed, making it difficult for anadromous trout and salmon to migrate upstream. The channel was deepened and better defined to allow anadromous fish easier access to the C.D. "Buzz" Besadny Anadromous Fisheries Facility. Nearly 5,000 cubic yards of bottom material was removed from the stream, creating a meandering stream channel. Large boulders along the deepened channel now provide resting locations for migrating adult fish. Both fish and anglers can use this new habitat during spawning runs.

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## **Strawberry Creek Weir Improvements**

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Expenditure: \$18,293 in FY96

*Contact: Paul Peeters, Fisheries Biologist, Sturgeon Bay.*

The Strawberry Creek rearing pond and salmon weir are important for the management of chinook salmon in Lake Michigan. They make up Wisconsin's primary egg collection facility for chinook salmon. Early in fiscal year 1996, the Strawberry Creek rearing pond and salmon collection weir were rebuilt. The refurbished rearing pond and collection facility should serve the Lake Michigan fisheries program for many years.

## *Activities continuing from FY97 through FY99*

### Assessment of PCB Assimilation in Sheboygan River Coho and Chinook

Expenditure: \$5,644 in FY96 and \$6,351 in FY97

Planned Expenditures: \$900 in FY98

*Contact: Brad Eggold, Fisheries Biologist, Plymouth.*

From 1987 to 1994, stocking of salmon and trout was halted in the Sheboygan River because of elevated PCB levels. This project evaluated the effect of PCBs in the Sheboygan River system on PCB levels in salmon and trout. During fiscal year 1996, this evaluation included a comparison between concentrations of PCBs in returning adult fish that had been stocked in the Sheboygan and those that had been stocked in the Root and Pigeon Rivers. Data showed no significant difference in PCB concentrations in adult coho salmon and steelhead returning to the Sheboygan, Pigeon, and Root Rivers. These data prompted the lifting of the stocking ban in 1995.

Expenditures for this project covered the costs of marking fish that were stocked in the Sheboygan and Pigeon Rivers and collecting smolts, sub-adult, and adult steelhead and coho and chinook salmon for contaminant analysis. This project is in the final stages and will include one more collection of adult chinook salmon returning to the Sheboygan and Root Rivers.

**This steelhead (40.5-in., 26 lbs., 10 oz.) was caught in Lake Michigan near Milwaukee and held the state record for over ten months. It was reared at the Kettle Moraine Springs Hatchery.**

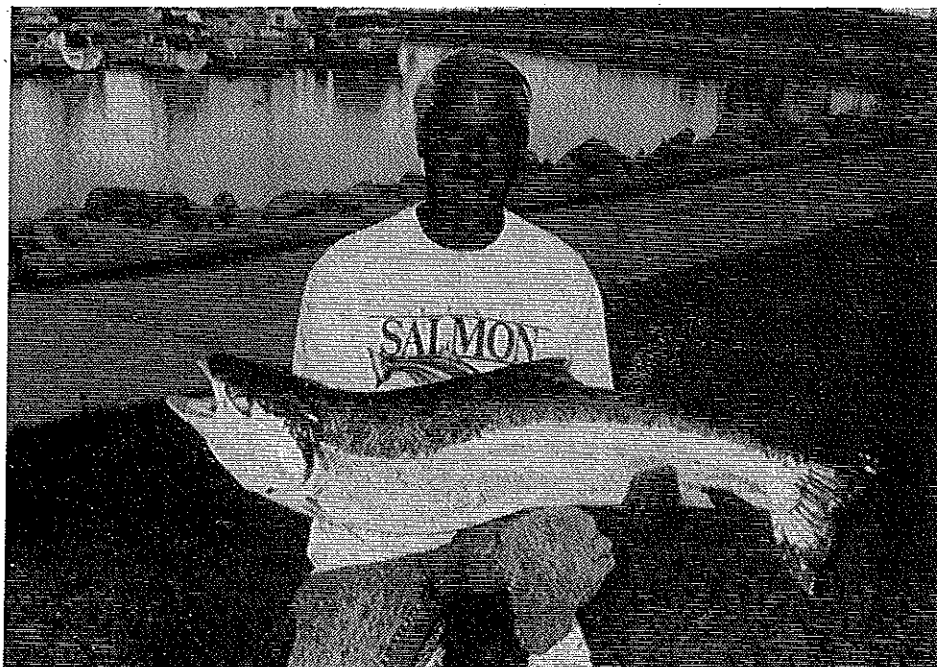


Photo by Paul Smith

## **Assessment of Seeforellen Strain Brown Trout**

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Expenditure: \$2,654 in FY96 and \$4,800 in FY97

Planned Expenditures: \$4,450 in FY98 and \$4,450 in FY99

*Contact: Brian Belonger, Fisheries Biologist, Peshtigo*

From 1991 to 1993, three strains of brown trout were stocked experimentally in Green Bay and Lake Michigan to increase the number of brown trout caught by anglers and to test the potential of a new strain for producing trophy-size fish. The three strains were domestic Wild Rose, feral Wild Rose, and seeforellen.

DNR staff marked yearling brown trout (approximately 578,000 fish) with fin clips to identify ages of returning fish, to monitor their growth, and to determine the percentage of the spawning population of each age.

The annual survival of each strain varied. The trophy potential of seeforellen is very promising: they live longer, and most three- and four-year-old brown trout caught by anglers are members of this strain. Also, at older ages they are larger than the other strains. In 1996, the seeforellen strain broke the Wisconsin brown trout record twice, increasing the record by 2.6 pounds to 35.12 pounds.

This project will be completed when brown trout from the 1991 through 1993 stockings are no longer found, possibly after fiscal year 1998.

## **Lake Michigan Creel Survey**

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Expenditure: \$94,992 in FY96 and \$113,650 in FY97

Planned Expenditures: \$92,000 in FY98 and \$92,000 in FY99

*Contact: Brad Eggold, Fisheries Biologist, Plymouth.*

Creel surveys are conducted to monitor the sport harvest of salmon and trout from Lake Michigan. Creel clerks conduct the surveys from March through October to determine fishing pressure, harvest size, and harvest rates of salmon and trout. They are stationed along the Lake Michigan shore and operate on a stratified, random schedule, counting anglers, cars, and boats to determine pressure; interviewing anglers to estimate the harvest; and measuring and weighing fish. Creel clerks conduct over 13,000 interviews each year. The clerks collect additional data, including fin clips, Floy tags, and coded wire-tagged heads from harvested fish, stomach contents for diet studies, and scales for determining the age of fish.

When combined with information about the commercial and charter harvests, the creel data help to estimate total harvest to develop stocking strategies and to decide how to manage the Lake Michigan fishery. In addition, information from the creel surveys and index sampling helps to adapt regulations to best manage salmonid populations.

## **Analysis of Lake Michigan Sport Fishery and Creel Surveys**

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Expenditure: \$13,947 in FY96 and \$19,280 in FY97

Planned Expenditures: \$13,000 in FY98 and \$13,000 in FY99

*Contact: Brad Eggold, Fisheries Biologist, Plymouth.*

The goal of this project is ensure that the Lake Michigan sport fishery operates optimally, based on survey data from moored boats, charters, and from Lake Michigan creel surveys. These valuable data help to estimate fishing effort and catch rates, and species composition and size of fish harvested. Data have been used to: 1) evaluate the effectiveness of stocking either fall fingerling accelerated-growth coho salmon or spring yearling coho salmon; 2) streamline the creel survey so effort is directed at sites and times anglers are present; 3) analyze the yellow perch component of the fishery and provide recommendations on current seasons and bag limits for this important near-shore fishery; and 4) guide the geographic distribution of stocking.

In the future, this project will play the important role of evaluating coho salmon rearing techniques and the need for changing salmonid stocking levels and catch limits. The effects of regulation changes and the population dynamics of Lake Michigan will be closely monitored.

## **Lake Trout Restoration and Management**

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Expenditure: \$23,579 in FY96 and \$30,200 in FY97

Planned Expenditures: \$29,000 in FY98 and \$29,000 in FY99

*Contact: Mike Toney, North Lake Michigan Supervisor, Sturgeon Bay.*

During the previous two years, this project diminished in size because near-shore summer surveys off Milwaukee and Sturgeon Bay were eliminated and because fall surveys were shortened. More emphasis at these sites was placed instead on determining the amount of lamprey wounding and scarring on lake trout and less on assessing the abundance of spawning lake trout. Lamprey wounding rates remain low. Efforts to survey the spawning population of lake trout were intensified on the Sheboygan Reef, a reef now considered to have once been the most productive lake trout reef in the Wisconsin waters of Lake Michigan. A relatively large number of lake trout stocked on this reef since the early 1980's have been found there as mature spawners up to 14 years old during the last two fall surveys. However, intensified juvenile surveys have not indicated successful natural reproduction during the past two years on this reef or elsewhere in the Wisconsin waters. Also as part of this project, fisheries biologists collected information for the strain comparison study in the Midlake Refuge and for the size at stocking study near Sturgeon Bay. The latter compares survival of yearling lake trout stocked at 20 per pound to those stocked at a larger size, ten per pound. Fish health specialists conducted various studies on lake trout samples collected through this project. Finally, the DNR continued to assist the U.S. Fish and Wildlife Service biologists with their federally-funded projects. These projects included the use of astro-turf egg incubators placed on the Jacksonport Deep Reef east of the Door Peninsula, and a study of the movement of adults tagged off Sturgeon Bay.

In 1998 and 1999, this project will contribute to the continuing joint state, federal, and tribal lake-wide evaluation of lake trout stocked by the U.S. Fish and Wildlife Service. Staff from Sturgeon Bay and Milwaukee will continue to jointly conduct netting surveys using the DNR research vessel, *Barney Devine*, and contracted commercial boats and gear to determine if long-term stocking of lake trout has resulted in detectable natural reproduction. The surveys will provide information on the abundance of adult and juvenile fish and relative survival of different strains in the Midlake Refuge. In addition, fisheries biologists will collect data on movement of tagged fish, contaminants, health, and lamprey wounding at near-shore and off-shore sites. Samples of fish will be provided upon request to researchers nationwide for special studies.

## **Salmon and Trout Broodstock Management and Evaluation**

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Expenditure: \$33,285 in FY96 and \$46,190 in FY97

Planned Expenditures: \$68,855 in FY98 and \$65,695 in FY99

*Contact: Pradeep Hirethota, Fisheries Biologist, Great Lakes Research Facility, Milwaukee  
regarding coho, chinook and steelhead management at the Root River Steelhead Facility  
Steve Hogler, Fisheries Biologist, Manitowoc  
regarding steelhead management at Besadny Fisheries Facility  
Paul Peeters, Fisheries Biologist, Sturgeon Bay  
regarding coho and chinook management at Besadny and Strawberry Creek*

Each year salmon and trout are stocked in many locations. Those stocked in Strawberry Creek, the Keweenaw River, and the Root River provide the basis for continuation of the salmon and trout program in Lake Michigan. When fish return to those rivers as adults attempting to spawn, fertilized eggs are collected for the hatcheries to raise. This project is an assessment of biological characteristics of the stocked fingerlings, yearlings, and the mature returning adults. Annual data collected include: length, weight, age, sex, fin clip, and the percent that survive to adulthood. Various lots of chinook, coho and steelhead are marked with fin clips or tags prior to stocking to evaluate the performance of different strains or to assess alternative rearing and disease treatments. Long-term trends indicate whether the desired characteristics of size, health, time of spawning run, and survival are achieved.

The Strawberry Creek Weir is the primary site for the spawning of chinook salmon. The C. D. "Buzz" Besadny Anadromous Fisheries Facility, on the Keweenaw River, and the Root River Steelhead Facility are used for recovering adult coho salmon and steelhead, and serve as backup facilities for recovery of spawning chinook salmon.

Annual reports are available for 1) all species returning to the Root River Steelhead Facility (contact Pradeep Hirethota), 2) coho and chinook salmon returning to the Besadny Facility and Strawberry Creek (contact Paul Peeters), and 3) steelhead returning to the Besadny Facility (contact Steve Hogler).

## **Sauk and Oak Creeks Habitat Improvement Project**

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Expenditure: \$11,170 in FY96 and \$12,700 in FY97

Planned Expenditures: \$7,500 in FY98 and \$7,500 in FY99

*Contact: Brad Eggold, Fisheries Biologist, Plymouth.*

Over the last ten years, Sauk Creek in Port Washington has become very wide and shallow. During periods of low water, many sections are difficult for trout and salmon to navigate. Over the past two years, DNR personnel installed 25 lunger structures to provide cover and resting areas for trout and salmon, created a K-dam to provide a deeper plunge pool for fish migration, repaired 300 feet of eroding stream banks, and narrowed and deepened 2,000 feet of the stream to help migrating salmon and trout.

Through the efforts of the DNR, local sports clubs, and businesses, some steelhead, chinook and coho salmon were stocked in Sauk Creek in 1996 and will be stocked again in the future. This will improve the homing of the fish during spawning migrations and should provide better fishing. In addition, creel survey results from 1995 and 1996 indicate that fishing pressure has increased 200 percent and harvest and catch have increased 300 percent since improvements began.

Since they were installed in 1990, the majority of the 27 lunger structures in Oak Creek have become non-functional due to heavy siltation and vandalism. Local anglers and fishing clubs have complained about the effects on the fishery. This project will keep the structures relatively clear of silt, provide routine maintenance, and stabilize the banks to improve fishing in the creek. The 25 Sauk Creek lunkers need only a few repairs and clearing of rock and small pebbles that were washed downstream during a major flood in June, 1996.

The first goal is to improve the salmon and trout carrying capacity of Oak Creek by maintaining the existing lunger structures. The second goal is to stabilize the banks to control erosion and improve the water quality and clarity in Oak Creek and, ultimately, in Lake Michigan. The third goal is to maintain the lunger structures in Sauk Creek.

### **Basic Program Services - Southeast Region**

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Expenditure: \$2,486 in FY96 and \$4,101 in FY97

*Contact: Richard Rebicek, Southeast Regional Operations, Eagle.*

Expenses under this project cover general administrative, travel, and staff training costs, as well as some equipment purchases for trout and salmon work that cannot be attributed to a single project. One example of work completed under this project is the compilation and printing of the annual Lake Michigan salmonid stocking summary.

### ***Activities beginning in FY98***

#### **Assessment of Brown Trout Movements**

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Planned Expenditures: \$6,030 in FY98 and \$3,230 in FY99

*Contact: Brian Belonger, Fisheries Biologist, Peshtigo.*

The goal of this project is to improve understanding of brown trout movements. During certain times of the year, brown trout are unavailable to anglers in Green Bay. It is unclear where the fish are during that time. The DNR will track ten brown trout fish using sonic transmitters. The results will signal where brown trout concentrate. As a result, angling opportunities will improve because brown trout anglers will learn where to look for the fish.

## **Charter Boat Report Technology**

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Planned Expenditures: \$2,400 in FY98 and \$2,400 in FY99

*Contact: Brad Eggold, Fisheries Biologist, Plymouth.*

When combined with information about the sport harvest, timely information on the species composition of the charter industry catch is essential to decide how to best manage the Lake Michigan fishery. The charter fishing industry directs almost all of its fishing effort toward salmon and trout. Since 1992, the charter fishing industry caught 21 percent of the total Lake Michigan anadromous fish catch in Wisconsin waters while expending only seven percent of the total Wisconsin Lake Michigan fishing effort. This amazing 0.34 fish per hour catch rate makes this fishery highly successful and profitable. As a result, data on the charter fishing harvest is crucial to adapt regulations to best manage salmon and trout populations.

In 1996, the DNR obtained a \$5,000 grant from the Anadromous Fish Conservation Act to improve the charter boat reporting system on Lakes Michigan and Superior through the use of "transactional voice technology". Charter captains can report their harvest over the phone, loading the data directly into a database. An experimental system began in 1997 with 30 captains on Lakes Michigan and Superior. Salmon stamp funds will pay for the necessary phone lines captains use to report their catch.

This project will improve salmon and trout harvest reporting, will increase the accuracy of the reporting system, will decrease dramatically the amount of time and money needed to process charter data, and will improve the enforcement of reporting regulations on the charter fishing industry.

## **Permanent Employee Salaries - Lake Michigan**

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Expenditure: \$51,976 in FY96 and \$48,807 in FY97

Planned Expenditures: \$52,026 in FY98 and \$52,026 in FY99

Permanent employee salaries are for Fisheries Technicians at both the Sturgeon Bay Service Center and the Great Lakes Research Facility. They work on lake trout assessments, manage operations at the Root River Steelhead Facility, conduct surveys and evaluations, collect data, and manage databases.

## • LAKE SUPERIOR EVALUATION, RESEARCH, AND EXPERIMENTAL ACTIVITIES

### *Activities ending in FY96 and FY97*

None.

### *Activities continuing from FY97 through FY99*

#### **Brule River Lamprey Barrier Operation**

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Expenditure: \$12,077 in FY96 and \$12,280 in FY97  
Planned Expenditures: \$13,300 in FY98 and \$13,300 in FY99

*Contact: Dennis Pratt, Fisheries Biologist, Superior.*

The sea lamprey, a parasitic species native to the Atlantic Ocean, invaded Lake Superior by the 1940's. Each lamprey may kill 20 to 40 pounds of fish in its lifetime, and they represent the largest single threat to the Lake Superior fishery. The Brule River sea lamprey barrier has trapped over 20,000 lampreys since 1986 while preventing them from spawning in the Brule River. The sea lamprey population in the Brule River is declining due to effective controls; this is evidenced by the decreasing numbers of sea lamprey trapped at the lamprey barrier each year.

The barrier supports the Lake Superior fishery in an additional way. Time-lapse video monitoring equipment counts all salmon and trout migrating upstream past the barrier, allowing accurate assessment of spawning runs. This information helps to improve stocking strategies and fishing opportunities.

#### **Creel Survey and Index Sampling**

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Expenditure: \$38,084 in FY96 and \$42,060 in FY97  
Planned Expenditures: \$40,280 in FY98 and \$40,280 in FY99

*Contact: Steve Schram, Lake Superior Fisheries Biologist, Bayfield.*

Annual creel surveys are conducted to monitor the sport harvest of salmon and trout from Lake Superior. Creel clerks randomly survey anglers at boat landings throughout the year. When combined with information about the commercial and charter harvests, the creel data help to estimate population size, to develop stocking strategies, and to decide how to manage the Lake Superior fishery. In addition, information from the creel surveys and index sampling helps to adapt regulations to best manage salmon and trout populations. The surveys also measure the success of other Lake Superior fishery management projects, including the Brule River lamprey barrier and the lake trout rehabilitation program.



To conduct creel checks, Scott Sapper visits landings to collect data on the lake trout sport harvest in Lake Superior. Information includes length of fish, number of hours spent fishing, and number of anglers.



Photo by Betsy Bartelt

## Lake Trout Restoration and Management

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Expenditure: \$22,398 in FY96 and \$36,810 in FY97

Planned Expenditures: \$37,500 in FY98 and \$37,500 in FY99

*Contact: Steve Schram, Lake Superior Fisheries Biologist, Bayfield.*

Lake trout restoration and management addresses the two critical factors regulating lake trout populations: harvest levels and sea lamprey-related fish mortality. The controls on harvest include constraints on commercial and sport fishing. Lake trout populations have responded well to these regulations. Sea lamprey-related fish mortality remains an obstacle to rehabilitation, and lamprey controls must continue.

Expenses under this project cover costs associated with the spring and fall lake trout assessments. This project evaluates the long-term trends in the lake trout population including distribution, abundance, growth and mortality rates. Also, in an effort to improve natural reproduction, almost 16 million lake trout eggs were placed in "astro-turf bundles" on Devils Island Shoal as an alternate stocking strategy. The results of the alternative stocking program will be presented in a report in fall 1997.

DNR fisheries biologists have begun to use a new, more accurate technique for determining the age of fish. By examining otoliths, bones from the inner ear, one can determine the age of fish. Lake trout are now known to live much longer than previously thought. This information allows a more accurate analysis of lake trout population age structures and can help the DNR adjust catch regulations.

Lake trout restoration and management efforts have resulted in a tremendous comeback for lake trout, and stocking in the Apostle Islands area has been discontinued. One excellent indicator of the health of the Lake Superior lake trout population is the increasing number of native lake trout caught as a percentage of total lake trout caught. For instance, in the Ashland-Bayfield area, 33.9 percent of all lake trout caught in 1985 were native lake trout. By 1994, the level had risen to 82.1 percent.

Despite the recent successes, complete restoration has not been achieved. Efforts to monitor harvest, lamprey-related mortality, age, and survival must continue to keep the Lake Superior lake trout population healthy and offer good angling opportunities.

## **Management Plan for Lake Superior Tributaries**

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Expenditure: \$9,068 in FY96 and \$8,830 in FY97

Planned Expenditures: \$9,330 in FY98 and \$9,330 in FY99

*Contact: Dennis Pratt, Fisheries Biologist, Superior.*

This project focuses on protecting, restoring, and enhancing the unique, self-sustaining lake-run salmon and trout fishery along the Lake Superior shoreline. The coldwater tributaries flowing into Lake Superior are unique trout resources in Wisconsin. They are the spawning and nursery areas for lake-run rainbow and brown trout and coho and chinook salmon. The majority of these fisheries is self-sustaining and, if managed properly, can provide stable lake and stream fisheries without expensive stocking.

During the next phase of this project, DNR staff will make steps toward the restoration of tributary fisheries. Many specific activities will contribute to this effort:

- Categorize each tributary stream section on the basis of its production of each salmon and trout species.
- Identify barriers to fish habitat development, such as lack of spawning areas and excess debris.
- Prioritize goals and objectives to protect and restore each tributary fishery.
- Develop a list of each tributary's problems and tactics to overcome them.
- Use this information to develop a basin-wide watershed management plan.

One important tributary that may be restored in the future is the Iron River. When Northern States Power Company removes its abandoned Orienta dam, the Iron River's previous connection with the Lake Superior fishery can be restored. Three important steps are essential to its restoration. First, a new lamprey barrier will prevent lamprey access to the upstream watershed. Second, additional fish blocks in two tributaries to the Iron River will keep salmon and trout from Lake Superior a safe distance from the Iron River National Fish Hatchery. Finally, efficient fish passage over the lamprey barrier and tributary restoration can begin.

## **Activities beginning in FY98**

### **Coaster Brook Trout Plan**

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Planned Expenditures: \$1,289 in FY98 and 1,289 in FY99

*Contact: Dennis Pratt, Fisheries Biologist, Superior.*

A unique type of migratory brook trout called the "coaster" brook trout was once found in Lake Superior. Many different factors led to its eradication in the early 1900's. This project will fund activities of the coaster subcommittee of the Great Lakes Fishery Commission to develop a strategy to reintroduce this once native fish. Once this plan is complete, the DNR will determine the role of Wisconsin in this large effort through the Lake Superior Basin Coaster Restoration Plan.

## **Permanent Employee Salaries - Lake Superior**

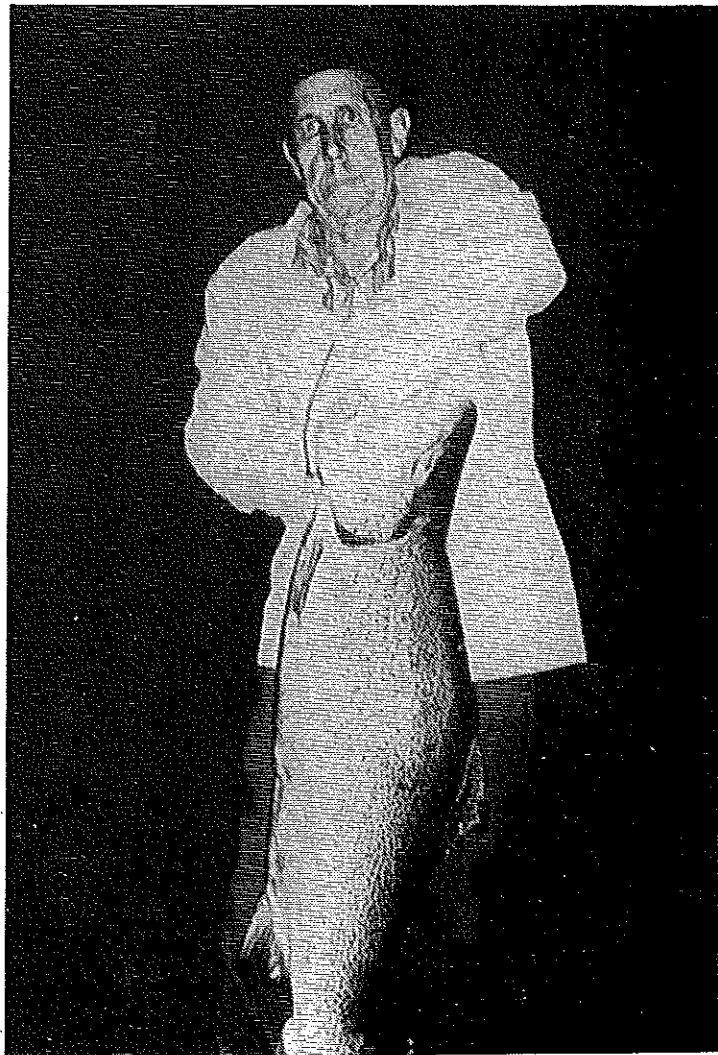
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Expenditure: \$39,773 in FY96 and \$39,209 in FY97

Planned Expenditures: \$39,803 in FY98 and \$39,803 in FY99

Permanent employee salaries are for a Fisheries Biologist and a Fisheries Technician on Lake Superior. The Fisheries Biologist conducts evaluations and research to support the fish stocking program for the Lake Superior watershed. The primary responsibilities of the Fisheries Technician are to conduct creel surveys and to monitor the harvest of lake trout by commercial fishers.

**Lloyd Arndt with his 35.12-pound brown trout, the current record holder, caught in Kewaunee Harbor, September 1996.**



**Photo by Kevin Naze**

# PROPAGATION ACTIVITIES

## *Activities ending in FY96 and FY97*

### **Lake Mills Hatchery - Coldwater Production**

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Expenditure: \$46,215 in FY96 and \$50,400 in FY97

*Contact: Al Kaas, Hatchery Superintendent, Lake Mills Hatchery, Lake Mills.*

These funds support the coldwater rearing program for coho salmon at Lake Mills Hatchery. Expenditures cover the cost of fish food; electricity for wells, freezers, and other needs; and facility and equipment maintenance needs related to salmon production. The hatchery produces 225,000 fingerlings that are transferred to other hatcheries for rearing. Also, 100,000 fall fingerlings and 120,000 spring yearlings are stocked directly from the hatchery.

Coho salmon experience excessive early mortality at the eyed egg stage. Thiamine treatments during the water hardening stage combined with cooler egg incubation temperatures have reduced the level of mortality significantly. Many expenditures during the previous biennium covered the costs of equipment repairs and replacements. The walk-in freezer and one well required repairs, and electrical wiring was upgraded to protect against fish loss from power failures. Purchases included equipment to provide well water for two show ponds, a back-up motor for one well, and netting to reduce predation of fish. The Department of Corrections provided the hatchery with used freezer compressors and evaporators at no cost.

### **Lakewood Rearing Station - Coldwater Production**

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Expenditure: \$1,225 in FY96 and \$4,000 in FY97

*Contact: Raoul Schottky, Hatchery Superintendent, Lakewood Rearing Station, Lakewood.*

On average, 50,000 brook trout are reared yearly at Lakewood Rearing Station for stocking in Lake Michigan. Salmon Stamp funds are used for various expenses such as fish food, equipment purchases, pond maintenance, transporting fish to stocking sites, and other supplies. One-half of the fish reared at Lakewood are stocked in the fall as fall fingerlings; the remaining fish are stocked the next spring as yearlings. Because Lakewood has an abundant water supply from cold clear spring ponds, brook trout and rainbow trout may be raised at this facility.

## *Activities continuing from FY97 through FY99*

### **Bayfield Hatchery - Coldwater Production**

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Expenditure: \$702,923 in FY96 and \$169,757 in FY97

Planned Expenditures: \$174,875 in FY98 and \$174,875 in FY99

*Contact: Larry Nelson, Hatchery Superintendent, Bayfield Hatchery, Bayfield.*

Annually, Bayfield Hatchery produces over 1.1 million fingerling and yearling trout and salmon for Lakes Michigan and Superior. These funds cover all of the hatchery's spawning, hatching, rearing and stocking costs. The majority of this funding will cover hatchery operation expenses that are directly related to Great Lakes fish propagation and stocking, such as electricity costs, fish food, vehicle operation and maintenance, building operation and maintenance, and supplies and equipment. The remainder supports administrative and facility maintenance expenses at the hatchery not directly related to fish propagation, such as staff training, office supplies and expenses, and grounds maintenance.

The Bayfield Hatchery constructed a water pipeline to supply water to the hatchery directly from Lake Superior. The new pipeline can provide up to 6,000 gallons of water per minute. In the past, the Bayfield Hatchery relied on high-capacity wells that required expensive maintenance. The pipeline will reduce electricity costs because it alleviates much of the need to operate wells and water recirculation pumps. The greater volume of water, the constant water temperature, and the new single-pass system will produce more and healthier fish. The expenditure for fiscal year 1996 included some payments for design and construction. The expenditure for fiscal year 1997 covered the remaining costs of construction. Salmon Stamp funds will cover the cost of the future debt service payments.

**This new high-capacity water pipeline brings water to the Bayfield Hatchery directly from Lake Superior.**



## **Besadny Anadromous Fisheries Facility Construction and Operations**

Expenditure: \$195,676 in FY96 and \$269,494 in FY97

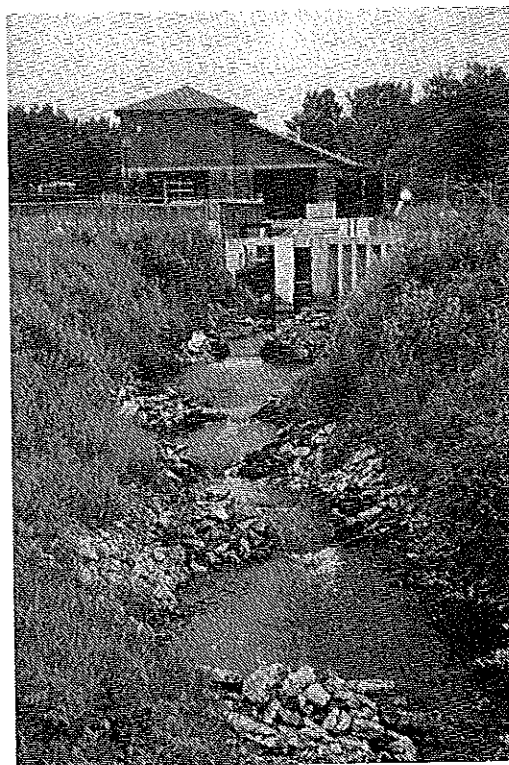
Planned Expenditures: \$61,000 in FY98 and \$61,000 in FY99

*Contact: Mike Baumgartner, Fish Propagation Technician, C. D. "Buzz" Besadny Anadromous Fisheries Facility, Kewaunee.*

The first phase in the development of the C.D. "Buzz" Besadny Anadromous Fisheries Facility was the construction of the basic barrier structure and fish ladder. This allows for the collection of fish attempting to spawn. Phase two was processing and public participation. The expenditures for the previous biennium supported the planning and design of phase two. The project involved the construction of a new building to facilitate the sensitive process of collecting, fertilizing and preparing eggs for transport to hatcheries. The new, clean facility is also very important to treat diseases and to collect scientific samples. An observation area now provides better viewing of the entire process; it is very popular with student groups and the general public. A display explaining the activities of the facility and its benefits to Lake Michigan trout and salmon fishing will be installed during the new biennium. The viewing area will be integrated with the existing observation deck and park-like walkways. Public restrooms are also included. A new building, an additional holding pond, a new cold storage building, and some landscaping work now make the facility fully operational.

In addition, this project assures the collection of approximately seven million high-quality eggs from naturally spawning trout and salmon. The weir facilities trap adult trout and salmon for collection and fertilization of eggs. Hatcheries rear the eggs until they are large enough to be stocked back into Lake Michigan. The Besadny facility operates in spring and late summer for steelhead and throughout the fall for other trout and salmon. The Strawberry Creek weir operates in fall for chinook salmon collection. Strawberry Creek and the Kewaunee and Manitowoc ponds also rear young fingerling and yearling fish to imprint them to the tributary streams; this ensures that they will return to the site as adults to spawn. These facilities are essential to Wisconsin's successful fish stocking program. Public education is also an important part of facility operations; new informational displays and signs will guide visitors.

**The C. D. "Buzz" Besadny Anadromous Fisheries Facility is an essential egg collection station as well as a research site for fisheries biologists.**





## **Kettle Moraine Springs Hatchery - Coldwater Production**

Expenditure: \$132,487 in FY96 and \$149,916 in FY97  
Planned Expenditures: \$143,600 in FY98 and \$143,600 in FY99

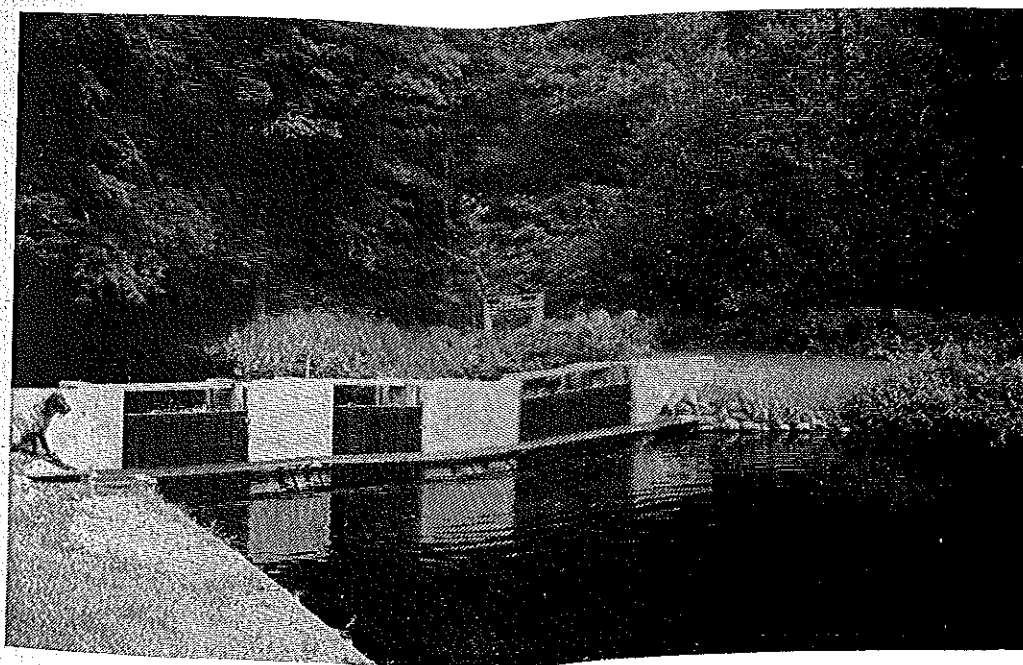
*Contact: Randy Link, Hatchery Superintendent, Kettle Moraine Springs Hatchery, Adell.*

Kettle Moraine Springs Hatchery is part of the DNR's very successful steelhead stocking program. Each year, high numbers of steelhead return to their spawning site. Kettle Moraine Springs Hatchery produces three strains of steelhead: approximately 181,000 each of Skamania and Chambers Creek and 161,000 of Ganaraska per year. Salmon Stamp funds cover all operation expenses that are directly related to fish propagation and stocking, such as: electricity costs, fish food, vehicle operation and maintenance, building repairs and maintenance, and supplies and equipment. These funds pay for the production of steelhead and the incubation and hatching of coho eggs to be reared at Lake Mills Hatchery. The hatchery's own distribution truck stocks fish along the Lake Michigan shore.

To protect the fish, hatchery staff expanded the predator-proofing system for the outdoor steelhead production areas. In addition, the hatchery updated its wastewater and sludge management system to meet new regulations. An important water filtration system extracts iron from the groundwater inflows used to raise the fish. During the next biennium, the hatchery may experiment with a water recycling system to increase water flow through the rearing areas.

Some of these funds also support other administrative and facility maintenance expenses at the hatchery not directly related to fish propagation, for example: staff training, office supplies and expenses, and facility and grounds maintenance. This project also covers expenditures for spawning, broodstock capture, and rearing of salmon and trout at sites away from the hatchery. Typically, this includes staff assistance during the capture and spawning of broodstock at the Besadny Facility and at the Root River Steelhead Facility, and for rearing and imprinting of fish at the Kenosha Cooperative Rearing Pond.

**The Thunder River Rearing Station produces over 300,000 fish annually and is supported solely by Salmon Stamp funds.**



## **Langlade Rearing Station - Coldwater Production**

Expenditure: \$65 in FY96 and \$38,405 in FY97

Planned Expenditures: \$25,000 in FY98 and \$25,000 in FY99

*Contact: Doran Arrowood, Hatchery Superintendent, Langlade Rearing Station, White Lake.*

The primary assignment of the Langlade State Fish Rearing Station is to rear and stock brown trout. Each spring, Langlade receives small fingerlings from St. Croix Fish Hatchery and raises them until they are large enough to stock in Lake Michigan. Each year, Salmon Stamp funds help pay for the rearing and stocking of approximately 100,000 fingerling and 60,000 yearling brown trout. To prevent widespread disease, the fish are vaccinated; as a result, less than one percent are lost to disease each year. Salmon Stamp funds cover the costs of fish production, such as: fish food, electricity, pond and raceway maintenance, equipment purchase and maintenance, and stocking costs. During the new biennium, new electrical wiring for automatic feeders will be covered under these funds.

## **Thunder River Rearing Station - Coldwater Production and Distribution**

Expenditure: \$14,469 in FY96 and \$41,365 in FY97

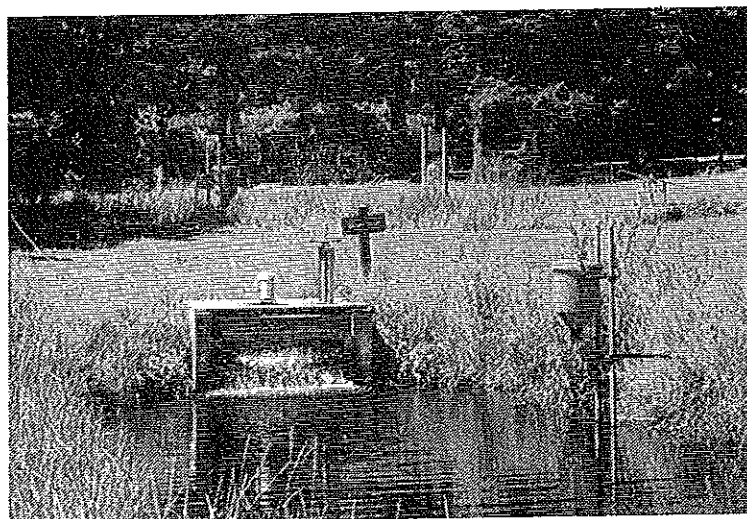
Planned Expenditures: \$49,000 in FY98 and \$49,000 in FY99

*Contact: Gary Holzbauer, Hatchery Superintendent, Thunder River Rearing Station, Crivitz.*

Each year, the Thunder River Rearing Station raises 218,000 brown trout and 90,000 coho salmon to be stocked in Lake Michigan and Green Bay. All of the fish are hatched at Wild Rose Fish Hatchery and then transported to Thunder River. During the last biennium, Salmon Stamp funds paid for fish food, air pumps to provide adequate oxygen and to reduce ice cover, a new electrical service near the rearing ponds, new wood platforms for the automatic feeders, and increased electricity demand during the winter. During the next biennium, Salmon Stamp funds will also cover maintenance and repair of buildings and a fish distribution tank.

To aid in cleaning and to enhance fish health, the station staff laid gravel on the bottom of the rearing ponds to reduce stagnant water and maintain water flow. To prevent furunculosis, brown trout are now vaccinated.

**Pond aerators and demand feeders are among the many pieces of equipment purchased with Salmon Stamp money at fish hatcheries.**





## **Westfield Hatchery - Coldwater Production and Distribution**

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Expenditure: \$22,643 in FY96 and \$37,130 in FY97

Planned Expenditures: \$32,000 in FY98 and \$32,000 in FY99

*Contact: Jim Martin, Hatchery Superintendent, Westfield Hatchery, Westfield.*

The Salmon Stamp program provides funds for the annual hatching and rearing of 500,000 chinook fingerlings at the Westfield Hatchery. In addition, the hatchery uses the money to rear approximately 80,000 coho salmon hatched from eggs at the Lake Mills Hatchery. When it is time for the fish to be stocked in Lake Michigan, these funds cover the transportation costs. The majority of hatchery expenses are directly related to fish propagation and stocking, such as electricity costs, fish food, facility operation and maintenance, supplies and equipment. Because an artesian well is the only water source for the hatchery, rainfall is monitored carefully using a new electronic rain gauge. In addition, extra maintenance on the well in 1997 now ensures an adequate water supply for the hatchery. In the future, these funds will help to progressively improve the hatchery building to keep out moisture, to prevent deterioration, and to help in cleaning. A small portion of the expenses are for administrative activities not directly related to propagation, such as conducting educational tours of the hatchery and staff training.

## **Wild Rose Hatchery - Coldwater Production and Renovation**

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Expenditure: \$16,421 in FY96 and \$15,600 in FY97

Planned Expenditures: \$15,600 in FY98 and \$165,600 in FY99

*Contacts: Steve Fajfer, Hatchery Superintendent, Wild Rose Hatchery, Wild Rose.*

The Wild Rose Hatchery, the DNR's largest coldwater fish hatchery, hatches and rears brown trout and chinook salmon to be stocked along the Lake Michigan shore. Salmon Stamp funds pay for only the labor costs associated with hatchery production. This project funds the collection of fertilized eggs from wild seeforellen brown trout captured in the Menominee River. Recently, several efforts have been aimed at reducing mortality and improving fish health. In the spring, an oxygen injection system remedies low-oxygen and high-nitrogen conditions. Since 1996, fish have been vaccinated against furunculosis; results have been very good. Sand filters keep out sand and silt to prevent gill problems and reduce egg morality during the incubation period. The Wild Rose Hatchery successfully produces 1.3 million chinook salmon smolts and 350,000 fall fingerling and 400,000 spring yearling brown trout each year. The hatchery's efforts produce great results; fish reared at Wild Rose broke the Wisconsin brown trout record twice in 1996.

The Wild Rose Hatchery was established in 1908. Most of the raceway and pond walls were built in the 1930's, and the present water supply and wastewater collection systems were built in the 1950's. Periodic maintenance has not kept pace with deterioration. The current facilities cannot meet new state standards for wells, groundwater protection, and wastewater discharge. During this biennium, an aquacultural engineering consultant will redesign the raceways and rearing ponds, water collection system, and the wastewater treatment system. The first phase of a groundwater survey was completed during the previous biennium. A new high-capacity well will be needed sometime in the future to support fish production at the hatchery.

During the previous biennium, the Department of Transportation donated a storage building as part of wetland mitigation from a highway project. The new building was moved from the construction site to the hatchery and reconstructed. The new facility provides rodent-proof feed storage, equipment storage and room for hatchery operations.

## *Activities beginning in FY98*

### **Nevin Hatchery Renovation**

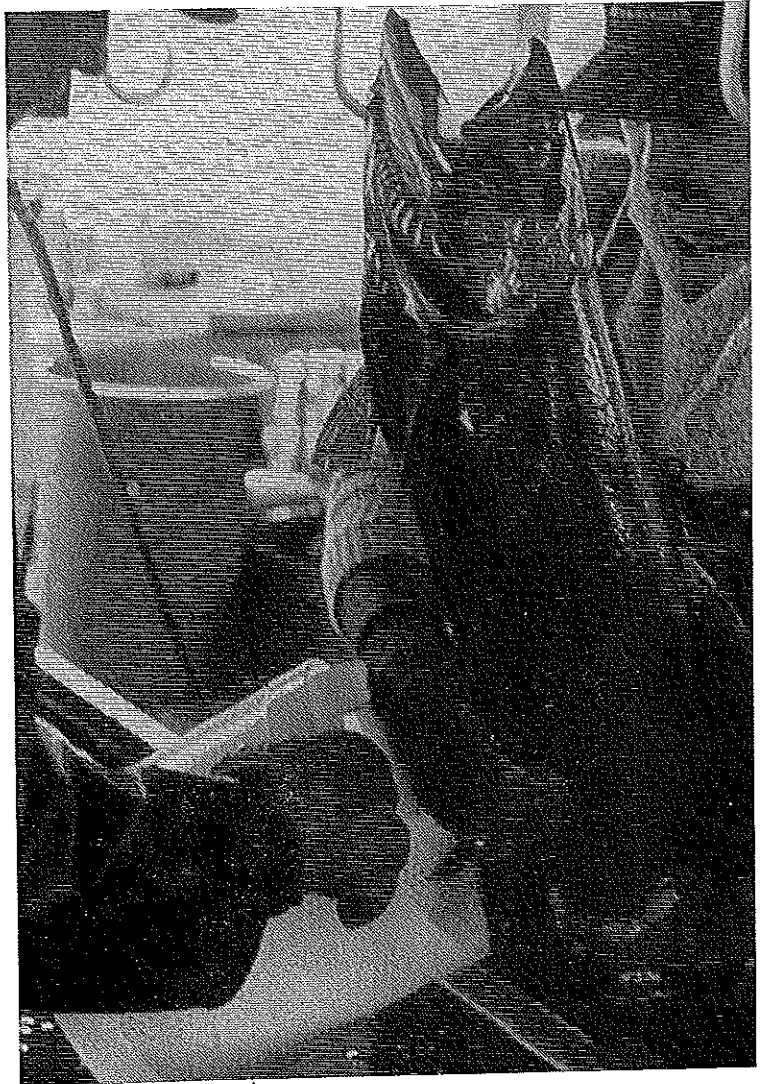
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Planned Expenditures: \$25,000 in FY98

*Contact: David Ives, DNR Central Office, Madison.*

The Nevin Hatchery is the oldest state fish hatchery in Wisconsin. It has undergone substantial development and redesign to enhance its fish rearing capabilities. The latest effort to modernize the facility was initiated during the 1989-91 biennium. The modifications forced the hatchery to reduce production by approximately 50 percent. Funding to complete the renovation became unavailable. During this biennium a new, reduced-cost design for the renovation of the hatchery will be developed. It will allow the hatchery to reach its previous production goals while maintaining quality.

**The Root River Steelhead Facility is a primary source of eggs from adult steelhead and coho salmon, as well as a secondary source for chinook salmon and brown trout.**



**Photo by David Lentz**

## **Root River Steelhead Facility Operations**

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Planned Expenditures: \$35,000 in FY98 and \$35,000 in FY99

*Contact: Richard Rebicek, Southeast Regional Operations, Eagle.*

The Root River Steelhead Facility traps adult trout and salmon for collection and fertilization of eggs. Hatcheries rear the eggs until they are large enough to be stocked back into Lake Michigan. All of the steelhead eggs collected at Root River are reared at Kettle Moraine Springs Hatchery; all of the coho salmon eggs are hatched at Kettle Moraine Springs Hatchery and then reared at Westfield Hatchery, Thunder River Rearing Station, and Lake Mills Hatchery. The weir also captures broodfish for use at Kettle Moraine Springs Hatchery. In addition to fish collection activities, Salmon Stamp funds also cover the costs of maintaining the facility and nighttime security. This facility is essential to Wisconsin's successful fish stocking program. It is an excellent location for collecting data about Lake Michigan salmon and trout populations. Public education is also an important part of facility operations; new informational displays will guide visitors.

## **Permanent Employee Salaries - Propagation Activities**

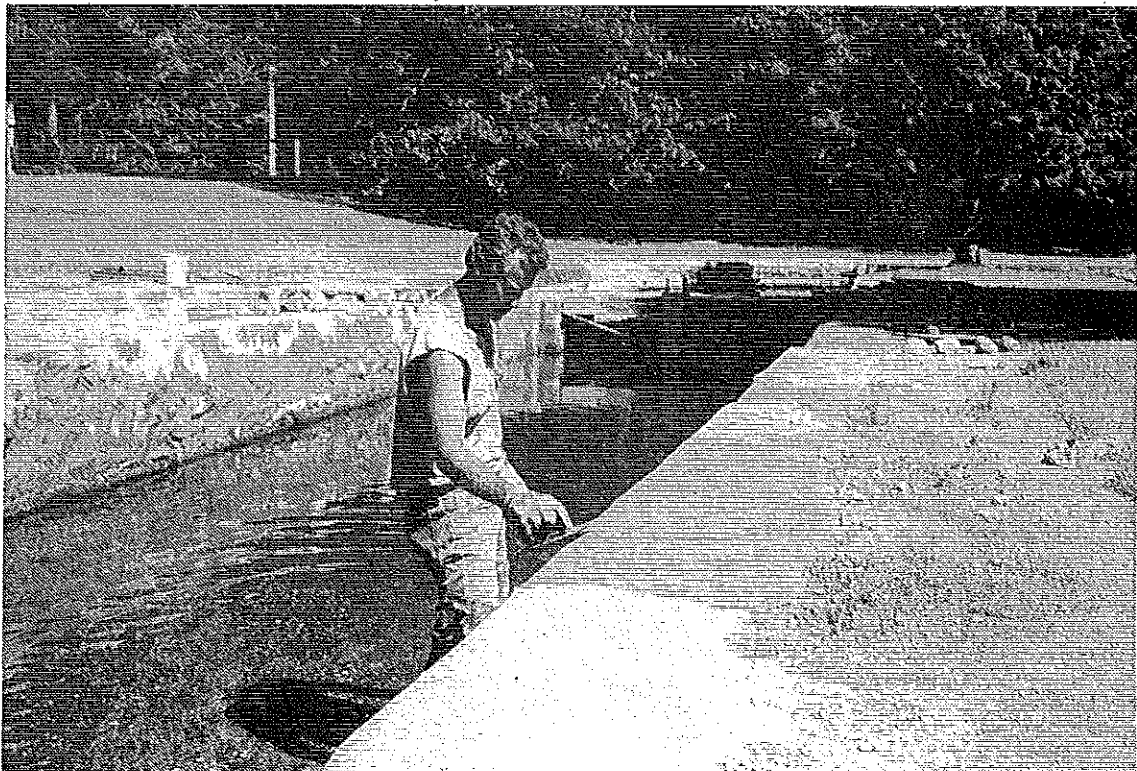
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Expenditure: \$24,215 in FY96 and \$23,684 in FY97

Planned Expenditures: \$24,165 in FY98 and \$24,165 in FY99

Permanent employee salaries are for a Fisheries Technician at the Kettle Moraine Springs Hatchery whose primary duties are incubating coho eggs and propagating and rearing steelhead.

**Hatchery facilities must be maintained to sustain production levels and produce healthy fish.**



# ADMINISTRATIVE ACTIVITIES

## *Activities ending in FY96 and FY97*

None.

## *Activities continuing from FY97 through FY99*

### **Administer the Salmon and Trout Stamp Program**

Expenditure: \$6,023 in FY96 and \$6,500 in FY97

Planned Expenditures: \$6,500 in FY98 and \$6,500 in FY99

*Contact: Bill Horns, Great Lakes Specialist, Madison.*

This project covers costs associated with the judging and printing of the Great Lakes Salmon and Trout Stamp.

### **Salmon Stamp Expenditure Report And Plan**

Expenditure: \$11,376 in FY96

Planned Expenditures: \$6,280 in FY98 and \$6,280 in FY99

*Contact: Bill Horns, Great Lakes Specialist, Madison.*

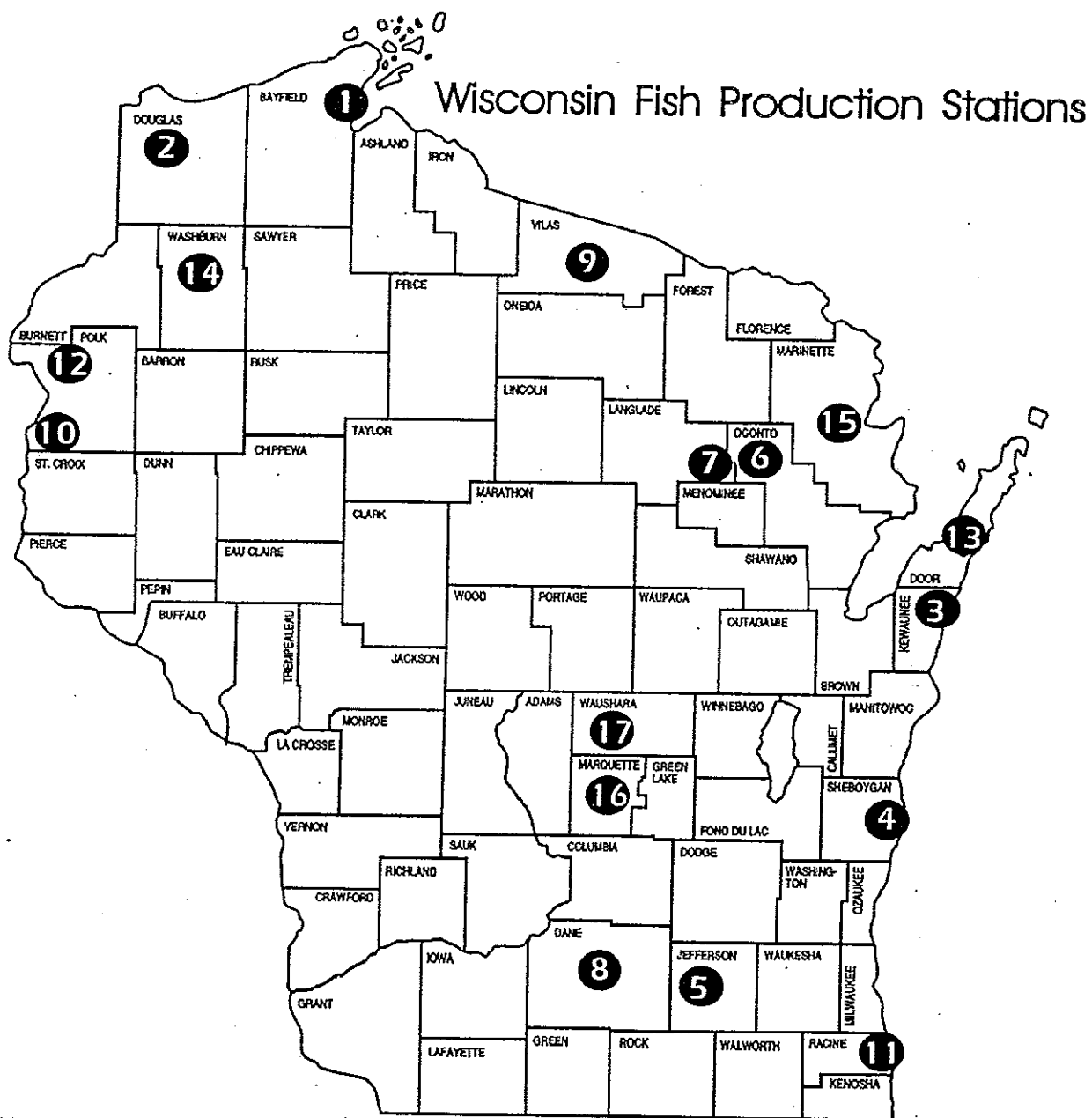
These expenses cover the costs of limited term employees to perform research, gather data, and write and assemble this Salmon Stamp Expenditure Report.

## *Activities beginning in FY98*

None.

### **Permanent Employee Salaries**

None.



<u>Facilities</u>	<u>Phone</u>	<u>Type of Fish Production</u>
1 Bayfield	(715) 779-5430	Coldwater
2 Brule	(715) 372-4820	Coldwater
3 Besadny Spawning Facility	(920) 388-2105	Coldwater
4 Kettle Moraine Springs	(920) 528-8825	Coldwater
5 Lake Mills	(920) 648-8012	Coldwater, Cool/warmwater
6 Lakewood	(715) 276-6066	Coldwater
7 Langlade	(715) 882-8757	Coldwater
8 Nevin	(608) 275-3246	Coldwater
9 Oehmcke	(715) 356-5211	Cool/warmwater
10 Osceola	(715) 294-2525	Coldwater
11 Root River Spawning Facility	(414) 638-0134	Coldwater
12 St. Croix Falls	(715) 483-3535	Coldwater
13 Strawberry Creek Weir	(920) 746-2860	Coldwater
14 Thompson	(715) 635-4147	Cool/warmwater
15 Thunder River	(715) 757-3541	Coldwater
16 Westfield	(608) 296-2343	Coldwater
17 Wild Rose	(920) 622-3527	Coldwater, Cool/warmwater